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EXAMINER
RALEIGH, DONALD L

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2879	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-18* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some * c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-5, 7, 11-12 and 14-17 are rejected under 35 U.S.C. 102(b) as

being anticipated by Driessen et al (US Patent No. 4,253,037).

Regarding Claim 1, Driessen discloses in Figure 1, a high pressure sodium

lamp (title) having a nominal power Pla, a discharge tube (4) with a ceramic wall

(Column 4, lines 19-20) and an internal vessel diameter D_{int}, enclosing a discharge

space in which a pair of electrodes (6 and 7) at a mutual electrode distance ed and a

filling of Na-amalgam with a sodium mol fraction (smf), a ratio of the internal discharge

vessel diameter D_{int} to the nominal lamp power Pla being substantially in a range of

0.045 $\leq D_{int}$/Pla $\leq$ 0.08, (Column 3, lines 34-38) D_{int} = 3.5mm, Pla = 50 watts,

then 3.5/50 = .07 within the claimed range.

wherein a ratio of the mutual electrode distance ed to the nominal power Pla is

substantially in a range of 0.2 $\leq$ ed/Pla $\leq$ 0.35. (Column 3, lines 34-38); ed=16mm and

Pla =50 watts, then 16/50 = .32 which is within the claimed range.

Jackson et al (US PG Pub. No. 2002/0185979).

Regarding Claim 4, Driessen discloses in Figure 1, a high pressure sodium

lamp (title) having a nominal power Pla, and comprising: a discharge tube with a

ceramic wall (Column 4, lines 19-20) and an internal vessel diameter D_{int}, enclosing a

discharge space; a pair of electrodes (6 and 7) at a mutual electrode distance ed;

wherein the discharge tube has a ratio ed/D_{int} between about 5.5 and 4.0; (Column 3,

lines 34-37) ed = 16mm, and D_{int} = 3.5mm, then ed/D_{int} = 4.57 within the claimed range.

a ratio of the mutual electrode distance ed to the nominal power Pla being

substantially in a range of $0.2 \le$ ed/Pla ≤ 0.35; (Column 3, lines 34-37) ed =16mm, Pla =

50 watts, then 16/50 = .32 within the claimed range.

and a ratio of the internal discharge vessel diameter D_{int} to the nominal lamp

power Pla being substantially in a range of $0.045 \le D_{int}$/Pla ≤ 0.08. (Column 3, lines 34-

37) D_{int} = 3.5mm and Pla = 50 watts, then D_{int} / Pla = .07 within the claimed range.

and a filling of Na-amalgam with a sodium mol fraction (smf) substantially in a

range of 0.6 < smf < 0.75, (Column 1, lines 54-57 teaches that the weight % of Mercury

in relation to the whole including Sodium and Mercury is 50% to 90%). Then

Wt% Hg/molecular wt. Hg =50/200.59 up to 90/200.59 or .00249 up to .00449.

Wt% Na/MW Na = 50/22.99 down to 10/22.99 or .02170 down to .00435.

If we identify the first fraction (of Hg) as A, and the fraction of Na as B. Then the

sodium mole fraction would be B/ (A + B). In the case that Hg is 50% then Na will also

be 50%. In such case B/A + B = .02170/(.02170 + .00249) = .02170/.02419 = .9.

In the case that Hg is 90% then Na will be 10% and in such case

B/A + B = .00435/(.00435 + .00449) = .00435/.00884 = .5.

The claimed smf lies within the range between .5 and .9.

Regarding Claim 5, Driessen discloses the high pressure sodium lamp wherein

the filling further comprises Xe (abstract, lines 9-10) having a pressure at room

temperature in the range of 400 mbar ≤ pXe ≤ 1000 mbar. (abstract, line 10 (100-1000

torr) = 133 to 1333 mbar (within the claimed range) (1 torr = 1.33 mbar).

Regarding Claim 7, Driessen discloses the lamp wherein the lamp emits light in

nominal operating condition with a color temperature Tc of at most 2500K (Column 6,

lines 57-58).

Regarding Claims 11 and 16, Driessen discloses the high pressure sodium

(lamp) wherein the Na-amalgam has a sodium mol fraction (smf) substantially in a

range of 0.6 < smf < 0.75. (Column 1, lines 54-57 teaches that the weight % of Mercury

in relation to the whole including Sodium and Mercury is 50% to 90%). Then

Wt% Hg/molecular wt. Hg =50/200.59 up to 90/200.59 or .00249 up to .00449.

Wt% Na/MW Na = 50/22.99 down to 10/22.99 or .02170 down to .00435.

If we identify the first fraction (of Hg) as A, and the fraction of Na as B. Then the

sodium mole fraction would be B/ (A + B). In the case that Hg is 50% then Na will also

be 50%. In such case B/A + B = .02170/(.02170 + .00249) = .02170/.02419 = .9.

In the case that Hg is 90% then Na will be 10% and in such case

B/A + B = .00435/(.00435 + .00449) = .00435/.00884 = .5.

The claimed smf lies within the range between .5 and .9.

Regarding Claims 12 and 17, Driessen discloses in Figure 1, a high pressure

sodium lamp (title) having a nominal power Pla, and comprising: a discharge tube with a

ceramic wall (Column 4, lines 19-20) and an internal vessel diameter D_{int}, enclosing a

discharge space; a pair of electrodes (6 and 7) at a mutual electrode distance ed;

wherein the discharge tube has a ratio ed/D_{int} between about 5.5 and 4.0; (Column 3,

lines 34-37) ed = 16mm, and D_{int} = 3.5mm, then ed/D_{int} = 4.57 within the claimed range.

Regarding Claim 14, Driessen discloses a high pressure sodium lamp (title)

having a nominal power Pla, and comprising: a discharge tube with a ceramic

wall(Column 4, lines 19-20) and an internal vessel diameter D_{int}, enclosing a discharge

space; a pair of electrodes (6 and 7) at a mutual electrode distance ed; and a filling of

Na-amalgam (title); a ratio of the mutual electrode distance ed to the nominal power Pla

being substantially in a range of $0.2 \leq ed/Pla \leq 0.35$ (Column 3, lines 34-37) ed =16mm,

Pla = 50 watts, then 16/50 = .32 within the claimed range.

Regarding Claim 15, Driessen discloses the high pressure sodium wherein a

ratio of the internal discharge vessel diameter D_{int} to the nominal lamp power Pla is

substantially in a range of $0.045 \leq D_{int}/Pla \leq .08$. (Column 3, lines 34-37) D_{int} = 3.5mm

and Pla = 50 watts, then D_{int} / Pla = .07 within the claimed range.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 13 and 18 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Driessen in view of Niimi (US Patent No. 6,791,267).

Regarding Claims 2, **13 and 18**, Driessen fails to exemplify the high pressure

sodium lamp, wherein a thickness of the wall (wt) is 0.4 ≤ wt ≤ 0.6 mm.

Niimi teaches a high pressure discharge lamp (abstract, line 1) with a ceramic

chamber (Column 9, line 66) and with a wall thickness of the chamber of .55mm

(Column 9, line 52) in order to improve the condensing efficiency of the projected light

(Column 2, lines 42-46).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to incorporate the thin wall, as taught by Niimi, into the lamp of

Driessen, in order to improve the condensing efficiency of the projected light.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Driessen in view of Jackson et al (US PG Pub. No. 2002/0185979).

Regarding Claim 3, Driessen fails to exemplify the high pressure sodium lamp

wherein the lamp has a wall load of at most 30 W/cm^2.

Jackson (979) discloses the high pressure lamp characterized in that the lamp

has a wall load of at most 30 W/cm2.(Paragraph [0058], Table 1) to maintain a fairly

constant wall loading over the power rating range of 150 to 400 watts (Paragraph

[0052], lines 13-14).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to incorporate the wall loading, as taught by Jackson, in the lamp

of Driessen, to maintain a fairly constant wall loading over the power rating range of 150

to 400 watts.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Driessen in view of Jackson et al (US PG Pub. No. 2005/0073256).

Regarding Claim 6, Driessen fails to exemplify the high pressure sodium lamp

wherein the electrodes are provided with emitter and wherein each of the electrodes

has an electrode diameter, which specified relatively to the average lamp current (Ila) at

nominal lamp power fulfils the relation: $0.2 < (D_{electrode})^2 / Ila < 0.45$.

Jackson (256) teaches a high pressure discharge lamp (abstract, lines 1-2) using

sodium (Paragraph [0003], line 2 (NaI)) characterized in that the electrodes are provided

with emitter (Paragraph [0002], lines 15-16 (emits light) and that each of the electrodes

has an electrode diameter, which specified relatively to the average lamp current (Ila) at

nominal lamp power fulfils the relation: $0.2 < (D_{electrode})^2 / Ila < 0.45$.

Jackson (256) teaches in Figure 6 a graph of the relationship between the lamp

current and the electrode diameter in order to provide a lamp with superb stability over

life (Paragraph [0007], lines 1-4). Looking at the graph with an electrode diameter of

0.6mm and a lamp current of 1.5, the above formula becomes:

$(D_{electrode})^2 / Ila = (.6)^2 / 1.5 = .24$ which satisfies above formula $0.2 < .24 < 0.45$.

It would have been obvious to one of ordinary skill in the art, at the time of the

invention, to incorporate the electrode and current limitations, as taught by Jackson

(256) into the lamp of Driessen, in order to provide a lamp with superb stability over life.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Driessen in view of Blau (US PG Pub. NO. 2004/0051472).

Regarding Claim 8, Driessen fails to exemplify a lighting system comprising a full electronic very high frequency (VHF) ballast for operating a lamp.

Blau teaches in the abstract, line 1, a full electronic VHF driver (electronic ballasts) for operating a lamp (gas discharge lamp)(Paragraph [0004], lines 1-2 teaches using the driver with a sodium lamp in order to convert the AC line power to a higher frequency to drive the lamp).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the electronic driver taught by Blau into the lamp of Driessen, in order to convert the AC line power to a higher frequency to drive the lamp.

Regarding Claim 9, Driessen fails to exemplify the lighting system wherein the VHF ballast is provided with resonant ignition means by which resonant ignition is applied on igniting the lamp.

Blau teaches wherein the VHF ballast (abstract, line 1, electronic ballast) is provided with resonant ignition means by which resonant ignition is applied on igniting the lamp. (abstract, lines 6-9, resonant frequency for starting the lamp), in order to compensate for the cyclic low voltages of the AC power line (abstract, lines 11-15).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the VHF ballast taught by Blau into the lamp of Driessen, in order to compensate for the cyclic low voltages of the AC power line.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to DONALD L. RALEIGH whose telephone number is

(571)270-3407. The examiner can normally be reached on Monday-Friday 7:30AM to

5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter J Macchiarolo/
Primary Examiner, Art Unit 2879

/Donald L Raleigh/
Examiner, Art Unit 2879